

REMARKS

In view of the above amendments and following remarks, reconsideration and further examination are requested.

The specification and abstract have been reviewed and revised to make editorial changes thereto and generally improve the form thereof, and a substitute specification and abstract are provided. No new matter has been added by the substitute specification and abstract. Also, enclosed is a "marked-up" copy of the original specification and abstract to show changes that have been incorporated into the substitute specification and abstract. The attached pages are captioned "Version with Markings to Show Changes Made."

The instant invention pertains to a motor to be used for recording and/or reproducing information stored in a compact disc or video disc, and also pertains to an apparatus employing this motor.

The motor comprises a bracket that defines a bearing housing and a mounting base, a metal fixed to an inner wall to the bearing housing, a stator on an outer wall of the bearing housing, and a rotor. The rotor includes a frame having in a top surface thereof through-holes, a shaft fixed to the frame, and a rotor magnet fixed to the frame. The stator includes a stator core with a coil there around. And, the metal fixed to the inner wall of the bearing housing is impregnated with oil so as to function as a bearing. Such a motor is generally known in the art as shown in Figure 9; however, this motor suffers from a drawback as follows.

During rotation of rotor 111, oil escapes from a top of the oil-impregnated metal 105 and splashes outwardly. This oil travels to the stator core 114, travels along an inner wall of the frame 102 and eventually reaches magnet 103. As a result of this, the oil impregnated within metal 105 decreases, which lowers reliability of the oil-impregnated metal functioning as a bearing.

Applicant has addressed and resolved this drawback by providing, in accordance with a first aspect of the invention, a cap facing the through-holes and spaced axially from the through-holes. The cap is also spaced from an outer circumference of the metal impregnated with oil and is also axially spaced from an in face of this metal. Such a cap is shown as element 17 in Figure 1A, for example. Because of the provision of the cap 17, upon rotation of the rotor 11, oil discharged from the metal

5 is prevented from traveling to the stator core 14, the inner wall of frame 2 or the magnet 3. Thus, the cap 17 serves to recycle oil discharged from the metal 5 back thereto, whereby the reliability of the metal 5 functioning as a bearing is not decreased. Claims 13 and 26 are believed to be representative of this aspect of the invention.

The known motor as depicted in Figure 9 also suffers from a drawback in that axial movement and vibration of the rotor is not adequately prevented such that errors in reading or writing information from or to a disc can result.

Applicant has addressed and resolved this second drawback by providing, in accordance with a second aspect of the invention, an attracting magnet, i.e. element 18 as depicted in Figure 3A, for example, for magnetically attracting the frame 2 of the motor. By using the attracting magnet 18 to attract the frame 2 of the motor, axial vibration or movement of the rotor is adequately prevented such that errors in reading or writing information from or to a disc are not realized. Claims 22 and 31 are believed to be representative of this aspect of the invention.

Claims 1, 2 and 10 were rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of Moritan et al. Claims 3-6 and 11 were rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of Moritan et al. and Gomyo et al. Claims 7, 8 and 12 were rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of Hsu et al. And, claim 9 was rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of Hsu et al. and Peterson.

By the current Amendment, claims 1-12 have been cancelled and claims 13-32 have been added. Of these new claims, claim 13 generally corresponds to former claim 1 with amendments made thereto. New claim 22 generally corresponds to former claim 7 with amendments made thereto. New claim 26 generally corresponds to former claim 10 with amendments made thereto. And, new claim 31 generally corresponds to former claim 12 with amendments made thereto. Accordingly, the rejection issued by the Examiner will be addressed as they pertain new claims 13-32.

Each of claims 13 and 26 recite a motor that comprises a bracket defining a bearing housing and a mounting base, a metal fixed to an inner wall of the bearing housing, a stator on an outer wall of the bearing housing, a rotor including a frame having in a top surface thereof through-holes, and

a cap facing said through-holes...said cap being spaced from an outer circumference of said metal and being axially spaced from an end face of said metal.

Such a motor is not taught or suggested by any of the references relied upon by the Examiner, either taken alone or in combination.

In this regard, in rejecting claims 1 and 10, the Examiner recognizes that Applicant's admitted prior art does not include a cap facing the through-holes in the frame. Accordingly, the Examiner relied upon Moritan et al.'s teaching of cap 218 for concluding that it would have been obvious to provide such a cap in the motor in Applicant's admitted prior art. This combination of prior art is not applicable with regard to new claims 13 and 26 for the following reasons.

The cap 218 of Moritan et al. is for the purpose of limiting axial movement of the rotor 201 when the rotor is excessively accelerated. The cap 218 is pressed onto an end of sleeve metal 215 such that a gap M is defined between a lower surface of locking groove 203c and an undersurface of a top portion of the cap 218. Axial movement of rotor 201 is limited by the size of this gap M. Thus, the cap 218 of Moritan et al. is for a completely different purpose than is the cap of the instant invention.

Specifically, the cap of the instant invention is for the recycling of oil into the metal functioning as a bearing. This recycling of oil is allowed for by the cap being "spaced from an outer circumference of said metal", as recited in each of claims 13 and 26. In Moritan et al. the purpose of the cap 218 is not to recycle oil to sleeve metal 15, and thus the cap has an interference fit with the outer periphery of the sleeve metal 215 (column 8, lines 24-26). Also, the cap 218 is pressed onto sleeve metal 215 until the cap 218 contacts the end surface of the sleeve metal 215 (column 8, lines 28-30).

The spacing between the cap and the inner circumference of the metal 5, as well as the axial spacing between the cap and the metal 5, allows for oil to be collected and returned to the metal 5, while also preventing oil from splashing or traveling into other areas of the motor.

Thus, because the cap 218 of Moritan et al. is not spaced from the sleeve metal 215, as is the cap of the instant invention, any combination of Applicant's admitted prior art and Moritan et al. would not result in the invention as recited in either one of claims 13 and 26. Thus, for this reason

alone claims 13 and 26 are allowable over a combination of Applicant's admitted prior art and Moritan et al.

Additionally, in the motor as depicted in Figure 9, as Applicant's admitted prior art, the holes 116 in the frame 102 are not in axial alignment with the metal 105. Accordingly, were a metal cap of the type disclosed by Moritan et al. provided on metal 105 of the motor as depicted in Figure 9, this cap would not "face the through-holes", as required by claims 13 and 26. Accordingly, for this additional reason any combination of Applicant's admitted prior art and Moritan et al. would not result in invention as recited in claims 13 and 26.

Thus, claims 13-21 and 26-30 are allowable over a combination of Applicant's admitted prior art and Moritan et al.

Furthermore, dependent claims 21 and 30 recite that a lower end surface of the cap is in contact with an upper surface of the bearing housing. This contact further ensures that oil is not discharged from the metal 5 to unwanted areas within the motor. Such a contact is not taught or suggested by Moritan et al., and accordingly, claims 21 and 30 are patentable in their own right.

In rejecting claims 3-6, the Examiner relied upon a combination of Applicant's admitted prior art, Moritan et al. and Gomyo et al. This rejection is respectfully traversed and is not applicable with regard to new claims 17-20 and 29.

In relying on Gomyo et al., the Examiner has taken the position that Gomyo et al. discloses a cap (22, 24, 27) which is placed into a inner wall of the stator core 21 with a radial gap being defined between an outer wall of oil-impregnated metal 31 and an inner wall of the cap. This interpretation of Gomyo et al. is respectfully submitted to be in error since elements 22, 24 and 27 of Gomyo et al. do not constitute a cap, and element 31 does not constitute an oil-impregnated metal. In this regard, element 22 is a bearing holder, element 24 is a bearing, element 27 is a magnetic fluid seal and element 31 is a shaft. Thus, bearing holder 22 of Gomyo et al. can be said to correspond to bearing holder 23 of the instant invention, radial bearing 24 of Gomyo et al. can be said to correspond to metal 5 of the instant invention, and shaft 31 can be said to correspond to shaft 1 of the instant invention. Also, because magnetic fluid seal 27 is for preventing lubricant from leaking, this seal can be said to correspond to the cap 17 of the instant invention.

However, cap 27 is not "pressed fitted" to an inner wall of stator core 21, as recited in claim 17. Accordingly, any combination of Applicant's admitted prior art, Moritan et al., and Gomyo et al. would not result in the invention as recited in claim 17. Indeed, any reasonable combination of Moritan et al. and/or Gomyo et al. with the conventional motor as depicted in Figure 9 would result in either a cap positioned on metal 105 of the motor in the same manner by which the cap 218 is positioned on sleeve metal 215 of Moritan et al., or a magnetic fluid seal 27 positioned above the bearing or metal 105 as depicted in Gomyo et al. In any event, no reasonable combination of Moritan et al. and/or Gomyo et al. with the motor as depicted in Figure 9 would result in a cap pressed fitted to an inner wall of the stator core 114. Accordingly, claim 17 is patentable in its own right.

Similarly, the radial gap as recited in claim 18 is also not taught or suggested by any combination of Applicant's admitted prior art, Moritan et al. and Gomyo et al., and accordingly, claim 18 is also patentable in its own right.

With regard to claims 19 and 29, contrary to the position taken by the Examiner Gomyo et al. does not disclose magnet 27a disposed outside of the cap, but rather magnet 27a forms part of the fluid seal or cap 27, and thus cannot be positioned outside thereof. Accordingly, claims 19 and 29 are also patentable in their own right. For analogous reasons, claim 20 is also patentable in its own right.

Claims 7, 8 and 12 were rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of Hsu et al. Claims 22 and 31 generally correspond to former claims 7 and 12, and accordingly, the combination of Applicant's admitted prior art and Hsu et al. will be discussed as it pertains to new claims 22 and 31.

Each of claims 22 and 31 recite a motor that comprises a bracket, a bearing housing, a metal contained in the bearing housing, a stator on an outer wall of the bearing housing, a rotor that includes a frame having in a top surface thereof through-holes, and

an attracting magnet for magnetically attracting said frame...said attracting magnet being on an end face of said stator core...such that said attracting magnet faces said through-holes and is axially spaced from said through-holes.

In rejecting former claims 7 and 12, the Examiner took the position that in view of Hsu et al.'s teaching of magnet 26 in combination with the motor as depicted in Figure 9, the subject matter of claims 7, 8 and 12 would have been obvious to one having ordinary skill in the art. This position is respectfully traversed for the following reasons.

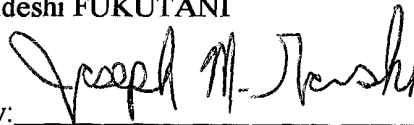
In Hsu et al., the permanent magnet 26 faces stator 36 and does not face any through-holes of a frame. Magnet 26 is thus for producing a torque to rotate rotor 22 and not "for magnetically attracting said frame", as recited in each of claims 22 and 31. In this regard, because the stator 36 is positioned between outer shell 14 and permanent magnet 26, permanent magnet 26 will have no influence on outer shell 14. Thus, permanent magnet 26 is not for magnetically attracting any frame. Similarly, because stators 40 and 42 are also respectively positioned between magnets 28 and 30 and end brackets 10 and 12, magnets 28 and 30 are also not for magnetically attracting any frame. Accordingly, claims 22 and 31 are not obvious over any combination of Applicant's admitted prior art and Hsu et al. Thus, claims 22-25, 31 and 32 are allowable over any combination of Applicant's admitted prior art and Hsu et al.

In view of the above amendments and remarks, it is respectfully submitted that the present application is in condition for allowance and an early Notice of Allowance is earnestly solicited.

If after reviewing this Amendment, the Examiner believes that any issues remain which must be resolved before the application can be passed to issue, the Examiner is invited to contact the Applicant's undersigned representative by telephone to resolve such issues.

Respectfully submitted,

Hideshi FUKUTANI

By: 

Joseph M. Gorski
Registration No. 46,500
Attorney for Applicant

JMG/adb
Washington, D.C. 20006-1021
Telephone (202) 721-8200
Facsimile (202) 721-8250
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